

REMARKS

Claim 65 has been canceled without prejudice or disclaimer. Therefore, claims 61-63 and 66-81 are pending in the present application and at issue.

It is respectfully submitted that the present amendment presents no new issues or new matter and places this case in condition for allowance. Reconsideration of the application in view of the above amendments and the following remarks is requested.

I. The Rejection of Claims 62-63, 65-66, and 72-79 under 35 U.S.C. 112

Claims 62-63, 65-66, and 72-79 are rejected under 35 U.S.C. 112 for failing to comply with the enablement rejection. This rejection is respectfully traversed for the reasons of record.

The claimed invention relates to enzymes exhibiting beta-1,4-endoglucanase activity (EC 3.2.1.4), which (a) has a temperature optimum of 65°C measured at a pH of 7.5 and (b)(i) has an amino acid sequence that is at least 95% identical to amino acids 1-456 or 1-617 of SEQ ID NO: 2 wherein identity is determined by GAP provided in the GCG program package using a GAP creation penalty of 3.0 and GAP extension penalty of 0.1 or (ii) is encoded by a DNA sequence that hybridizes to nucleotides 76-1455 of SEQ ID NO: 1 under high stringency conditions, wherein the high stringency conditions are defined as hybridization in 5xSSC at 45°C and washing in 2xSSC at 70°C.

The claimed enzymes are structurally similar because they have an amino acid sequence that is at least 95% identical with amino acids 1-456 or 1-617 of SEQ ID NO: 2 or are encoded by a DNA sequence which hybridizes under high stringency conditions with nucleotides 76-1455 of SEQ ID NO: 1. Because of the structural similarity of the claimed polypeptides, persons of ordinary skill in the art would expect that the polypeptides have beta-1,4-endoglucanase activity.

In response to Applicants' arguments, the Office stated that "Since the amino acid sequence of a protein determines its structural and functional properties, predictability of which changes can be tolerated in a protein's amino acid sequence and obtain the desired activity requires a knowledge of and guidance with regard to which amino acids in the protein's sequence, if any, are tolerant of modification and which are conserved ... and detailed knowledge of the ways in which the protein's structures relates to its function." This is respectfully traversed.

As explained in prior responses, the specification at page 13, line 21 to page 14, line 2, discloses procedures for identifying essential amino acids in the sequence of SEQ ID NO: 2. These procedures have been used routinely and successfully for many years for identifying

essential amino acids and the active site. While some experimentation might be necessary to determine the essential amino acids in the sequence of SEQ ID NO: 2, such experimentation would require carrying out a simple process without special equipment or unusual reaction conditions. This experimentation, if required, would not be undue and would not require ingenuity beyond that expected of one of ordinary skill in the art. Certainly, there is no evidence to the contrary. Therefore, one skilled in the art can predict which modifications, if any, would result in a loss of the desired activity/utility.

Moreover, the claims require that the polypeptides exhibit beta-1,4-endoglucanase activity. Thus, any inactive polypeptides having an amino acid sequence that is at least 95% identical to amino acids 1-456 or 1-617 of SEQ ID NO: 2 or which is encoded by a DNA sequence that hybridizes to nucleotides 76-1455 of SEQ ID NO: 1 under high stringency conditions are not encompassed by the claims.

Moreover, the Office has issued a large number of patents on polypeptides defined by an amino acid sequence having at least 95% identity with a reference sequence and polypeptides encoded by a nucleic acid sequence which hybridizes with a reference sequence under high stringency conditions. Examples are U.S. Patent Nos. 6,124,127, 6,399,351, 6,630,340 and 6,815,192.

For the foregoing reasons, Applicants submit that the claims overcome this rejection under 35 U.S.C. 112. Applicants respectfully request reconsideration and withdrawal of the rejection.

II. Conclusion

In view of the above, it is respectfully submitted that all claims are in condition for allowance. Early action to that end is respectfully requested. The Examiner is hereby invited to contact the undersigned by telephone if there are any questions concerning this amendment or application.

Respectfully submitted,

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